REMARKS

In the Office Action, the Examiner withdrew the anticipation rejection against claims 1-9, 23, 24, 28, 30, and 32 under 35 U.S.C. §102(e) and the double patenting rejection against claim 30. However, the Examiner maintained the lack of enablement rejection and raised new anticipation and obviousness rejections. Each of the maintained and new rejections is addressed separately below.

In view of the amendments noted above and the remarks below, applicant respectfully requests reconsideration of the merits of this patent application.

A petition for two months extension of time accompanies this response so that the response will be deemed to have been timely filed. If any other extension of time is required in this or any subsequent response, please consider this to be a petition for the appropriate extension and a request to charge the petition fee to Deposit Account No. 17-0055. No other fee is believed to be due in connection with this response. However, if any fee is due in this or any subsequent response, please charge the fee to the same Deposit Account No. 17-0055.

Enablement rejection under 35 U.S.C. §112-first paragraph

The Examiner maintained the rejection against claims 1-9, 23-25, 28-30, and 32 under 35 U.S.C. §112, first paragraph. In particular, the Examiner alleged that the specification, while being enabling for a method for inducing a T cell- or B cell-mediated immune response to PAP in a mammal via intramuscular, intravascular, intravenous, or intraarterial administration of a recombinant pTVG or vaccinia virus construct comprising a PAP-encoding polynucleotide operably linked to a promoter, does not reasonably provide enablement for a method for inducing any immune response to PAP in a mammal to treat prostate cancer via any route of administration of any recombinant DNA construct comprising a PAP-encoding polynucleotide linked to any transcriptional regulatory element.

While not agreeing with the Examiner, applicant has amended claims 1 and 23 to facilitate prosecution and reserves the right to pursue the deleted subject matter in a subsequent application.

Amended claim 1 is now directed at a method for inducing a humoral (B cell) or cellular (T cell) immune reaction to a human PAP in a human subject via intradermal, intramuscular, intravascular, intravenous, or intraarterial administration of a recombinant DNA construct

comprising (i) a backbone of pNGVL3, (ii) a polynucleotide sequence encoding human PAP inserted into the backbone of pNGVL3 and operably linked to a promoter, and an ISS motif inserted into the backbone of pNGVL3. The only differences between claim 1 as amended and the method that the Examiner indicated to have been enabled by the specification are the recitation of intradermal administration as an additional route of administration and the recitation of the recombinant DNA construct by its components in claim 1. With regard to the former, the intradermal route is shown to be effective in examples 4-7 and 9 of the application. With respect to the latter, the recombinant DNA construct is defined by its components rather than by a particular name (pTVG) for clarity and support can be found at sections "2. Construction of pTVG4" and "3. Construction of pTVG-HP for human clinical trials" on pages 32 and 33 of the application. Accordingly, claim 1 and its dependents, as amended, are believed to have been enabled.

Claim 23 has been amended similarly as claim 1. For the same reasons discussed above, claim 23 and its dependents, as amended, are also believed to have been enabled.

Claim rejections under 35 U.S.C. §102 (b)

The Examiner rejected claims 1-3, 5-9, 23, 24, 28, and 30 as being anticipated by Spitler et al. (U.S. Patent 6,328,969). While not agreeing with the Examiner for the reason, among others, that Spitler et al. is not enabling due to the lack of working examples, applicant has amended claims 1 and 23 to facilitate prosecution and reserves the right to pursue the deleted subject matter in a subsequent application.

Claims 1 and 23 as amended now recite a recombinant DNA construct comprising (i) a backbone of pNGVL3, (ii) a polynucleotide sequence encoding human PAP inserted into the backbone of pNGVL3 and operably linked to a promoter, and an ISS motif inserted into the backbone of pNGVL3. Because Spitler et al. do not teach such a recombinant DNA construct, claims 1 and 23 and their dependents as amended are no longer anticipated by Spitler et al.

Claim rejections under 35 U.S.C. §103 (a)

The Examiner rejected claims 4, 25, and 29 as being obvious over Spitler et al. (U.S. Patent 6,328,969). In the Examiner's opinion, while Spitler et al. do not disclose the specific features recited in these claims, these features are obvious in view of what Spitler et al. have

otherwise disclosed. In particular, the Examiner alleged that it would have been obvious to administer a vector comprising an animal specific PAP such as a rodent PAP to treat prostate cancer in a rodent (e.g., rat) and it would have been obvious to use any vector including a plasmid vector with a backbone of pNGVL3 containing an ISS motif or a pTVG4 plasmid vector to administer a PAP-encoding polynucleotide. Further, the Examiner alleged that a skilled artisan would have been motivated to do the above and would have a reasonable expectation of success. Applicant respectfully traverses the rejection.

Biotechnology is highly unpredictable art. The unpredictable nature makes it very difficult to predict whether a theoretically possible idea will in fact work without actual experimentation. For example, the idea of using antisense oligonucleotides to block gene expression in animals for treating various diseases is theoretically sound but actual experimentation showed that it does not work in most cases. Vaccines and vaccination belong to the art of biotechnology and are no exception to the general rule of unpredictability. It is theoretically possible to elicit an immune response against any protein in an animal by administering the protein to the animal. In reality, however, it may not work for many proteins for various known or unknown reasons. Examples of some of the known reasons include (1) the protein may elicit the "wrong" kind of response, tolerant response, rather than the "right" kind of response, immune response, (2) the protein may be inactivated (e.g., proteolytic degradation, immunological inactivation, or inherently short half-life) before producing any effect, and (3) the protein may not reach the target area because, for example, the protein may be adsorbed by fluids, cells, and tissues where the protein has no effect. Anybody with a background in immunology can make the proposal of administering a particular protein to an animal to elicit a desired immune response against the protein. However, without experimental support, a skilled artisan would not be able to predict with reasonable certainty whether the idea would actually work.

Spitler et al. disclose the broad, general concept of administering any antigen that is over-represented in the prostate gland (or any immunologically effective portion thereof) via any delivery method to elicit an anti-tumor immune response to prostate tumors. PAP and naked DNA are mentioned along with other prostate-specific antigens and vaccine types as examples. However, there is no working example in Spitler et al. to support any of the prostate-specific antigens and vaccine types, much less the PAP plasmid DNA vaccine in particular. As discussed

above, such a broad, general disclosure based on theory and without experimental support would at most make the PAP plasmid DNA vaccine obvious to try, but without reasonable likelihood of success.

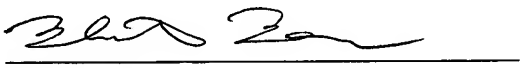
In addition to the above, the claims at issue as amended contain additional limitations (e.g., the administration of human PAP to a human subject via a specific plasmid vector containing a pNGVL3 backbone, a PAP coding sequence, and an ISS motif) that make the likelihood of success even less predictable. For example, it is well known in the art that it is easier for a tolerant response to be elicited if an antigen of the same species is administered, as required by the amended claims. Furthermore, the claims are limited to the use of a particular type of vaccine, plasmid DNA vaccine, as opposed to any type of vaccine which will include other types such as protein vaccines, dendritic cell-based vaccines, vaccinia/viral vector vaccines, and bacterial vector vaccines. As each type of vaccine has unique requirements not shared by others, the likelihood of success of one type cannot be predicted based on that of another. For example, in the case of plasmid DNA vaccine, it requires the successful expression of an antigen and the successful uptake, processing, and presentation of the antigen in a host subject *in vivo*, which are not of concern to dendritic cell-based vaccines. Therefore, the success of a plasmid DNA vaccine cannot be predicted with reasonable certainty by that of another type of the same antigen, much less by Spitler et al. that do not provide any data on any vaccine type.

For all the above reasons, applicant respectfully submit that amended claims 1 and 23 and their dependents are not obvious over Spitler et al.

Conclusion

Having addressed each issue raised by the Examiner in connection with the amended claims, the claims as amended are believed to be in condition for allowance and a Notice of Allowance is respectfully requested. Should any issues remain outstanding, the Examiner is invited to contact the undersigned at the telephone number appearing below if such would advance the prosecution of this application.

Respectfully submitted,



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